In the Claims:

Please amend claims 1, 6, 17 and 22 as indicated below.

1. (Currently amended) A network device, comprising:

a cell processing unit configured to receive incoming data cells from a network for a plurality of communication channels;

a timer configured to provide a timer value to said cell processing unit; and

a memory coupled to said cell processing unit and configured to store one or more policing parameters and rollover data for each of the communication channels, wherein the rollover data comprises an indication of a rollover relationship between the timer value and one of the policing parameters for each of the communication channels;

wherein for each received incoming data cell, said cell processing unit is configured to assign an arrival time from the timer value and compare the received incoming data cell's arrival time to the one or more policing parameters for the received incoming data cell's communication channel to determine if the received incoming data cell is conforming or non-conforming to a rate for the communication channel, wherein said cell processing unit is configured to access the rollover data for the received incoming data cell's communication channel to account for the rollover relationship when comparing the arrival time to the one or more policing parameters; and

wherein said memory is further configured to store operations and maintenance data indicating connection availability information for each communication channel.

2. (Original) The network device as recited in claim 1, wherein said timer is configured to increment the timer value at a predetermined frequency, wherein the timer value rolls over to zero and continues incrementing upon reaching a maximum timer value, and wherein the one or more policing parameters comprise a theoretical arrival time, wherein said theoretical arrival time rolls over upon being incremented past a maximum value, and wherein the rollover data is configured to indicate for each communication channel whether or not the timer value and theoretical arrival time are in the same rollover phase.

3. (Original) The network device as recited in claim 2, further comprising:

a timer rollover phase indicator configured to indicate a current rollover phase of the timer value; and

wherein said cell processing unit is configured to access said memory to perform an update of the rollover data for each communication channel at least once per rollover phase of the timer value.

4. (Original) The network device as recited in claim 3, wherein for each communication channel the rollover data is further configured to indicate the rollover phase of the timer value the last time the rollover data was updated, wherein to perform the update of the rollover data for each communication channel the cell processing unit is configured to:

compare the current rollover phase of the timer value to the rollover phase of the timer the last time the rollover data was updated;

if the current rollover phase of the timer value is different than the rollover phase of the timer the last time the rollover data was updated, the cell processing unit is configured to:

update the rollover data to indicate if the theoretical arrival time is ahead, behind, or in the same rollover phase as the timer value; and

update the rollover data to indicate the current timer value rollover phase as the rollover phase of the timer value the last time the rollover data was updated.

5. (Original) The network device as recited in claim 4, wherein the timer rollover phase indicator comprises a global register bit configured to be toggled each time the timer value rolls over, and wherein for each communication channel, the rollover data comprises:

two bits encoded to indicate that the theoretical arrival time value for the communication channel is ahead, behind or in the same rollover phase as the timer value; and

a third bit configured to indicate the rollover phase of the timer value the last time the rollover data was updated.

6. (Currently amended) The network device as recited in claim 3,

~~wherein said memory is further configured to store operations and maintenance data indicating connection availability information for each communication channel,~~ the network device further comprising:

wherein said cell processing unit is configured to perform a scanning function to scan the operations and maintenance data for the plurality of communication channels at least once per rollover phase of the timer value; and

wherein said cell processing unit is configured to access said memory to perform the update of the rollover data for each communication channel as part of said scanning function.

7. (Original) The network device as recited in claim 6, wherein said cell processing unit is configured to perform said scanning function more frequently than once per roll over phase of the timer value, the network device further comprising:

a timer rollover indicator configured to be set when the timer value rolls over;

wherein said cell processing unit is configured to check the timer rollover indicator upon initiating the scanning function, wherein if the timer rollover indicator is set, the cell processing unit is configured to perform the update of the rollover data as the operations and maintenance data for each communication channel is scanned, and wherein if the timer rollover indicator is not set, the cell processing unit is configured to perform the scanning function without performing the update of the rollover data; and

wherein the timer rollover indicator is cleared upon completing a scan in which the update of the rollover data is performed for each communication channel.

8. (Original) The network device as recited in claim 7, wherein for each communication channel the rollover data is further configured to indicate the rollover phase of the timer value the last time the rollover data was updated, wherein to perform the update of the rollover data for each communication channel the cell processing unit is configured to:

compare the current rollover phase of the timer value to the rollover phase of the timer the last time the rollover data was updated;

if the current rollover phase of the timer value is different than the rollover phase of the timer the last time the rollover data was updated, the cell processing unit is configured to:

update the rollover data to indicate if the theoretical arrival time is ahead, behind, or in the same rollover phase as the timer value; and

update the rollover data to indicate that the rollover phase of the timer value the last time the rollover data was updated is the current timer value rollover phase.

9. (Original) The network device as recited in claim 2, further comprising:

a timer rollover phase indicator configured to indicate a current rollover phase of the timer value;

wherein for each communication channel the rollover data is further configured to indicate the rollover phase of the timer value the last time the rollover data was updated;

wherein for each received incoming data cell, before comparing the arrival time to the theoretical arrival time for the received incoming data cell's communication channel said cell processing unit is configured to compare the current rollover phase of the timer value to the rollover phase of the timer the last time the rollover data was updated, and if the current rollover phase of the timer value is different than the rollover phase of the timer the last time the rollover data was updated, update the rollover data in said memory for the received incoming data cell's communication channel.

10. (Original) The network device as recited in claim 9, wherein said cell processing unit is further configured to perform an update function at least once per rollover phase of the timer value, wherein the rollover data for each communication channel is updated by the update function if the current rollover phase of the timer value is different than the rollover phase of the timer the last time the rollover data was updated.

11. (Original) The network device as recited in claim 10, wherein for each communication channel, the rollover data comprises:

a bit R, wherein R is set to indicate that the theoretical arrival time value for the communication channel is ahead of the timer value in rollover phase;

a bit B, wherein B is set to indicate that the theoretical arrival time value for the communication channel is behind the timer value in rollover phase, wherein R and B are both cleared to indicate that the theoretical arrival time value for the communication channel and the timer value are in the same rollover phase; and

a bit V, wherein V indicates the rollover phase of the timer value the last time the rollover data was updated.

12. (Original) The network device as recited in claim 11, wherein the one or more policing parameters further comprise a limit value, wherein for each received incoming data cell, the cell processing unit is configured to compare the received incoming data cell's arrival time to the one or more policing parameters by accessing the rollover data and policing parameters for the received incoming data cell's communication channel, wherein the received incoming data cell is conforming if:

R is set and the cell's arrival time is greater than or equal to the theoretical arrival time minus the limit value, taking into account that the theoretical arrival time is ahead of the cell's arrival time in rollover phase; or

R is not set and B is set; or

R and B are both not set and the cell's arrival time is greater than or equal to the theoretical arrival time minus the limit value.

13. (Original) The network device as recited in claim 12, wherein the received incoming data cell is non-conforming if:

R is set and the cell's arrival time is less than the theoretical arrival time minus the limit value, taking into account that the theoretical arrival time is ahead of the cell's arrival time in rollover phase; or

R and B are both not set and the cell's arrival time is less than the theoretical arrival time minus the limit value.

14. (Original) The network device as recited in claim 13, wherein the one or more policing parameters further comprise an increment value, wherein for each received incoming data cell, said cell processing unit is configured to increment the theoretical arrival time for the received incoming data cell's communication channel after determining that the cell is conforming, wherein if the cell is conforming the theoretical arrival time is set to:

the current theoretical arrival time plus the increment value if R is set or if R is not set and the cell's arrival time is less than the current theoretical arrival time; or

the cell's arrival time plus the increment value if R is not set and the cell's arrival time is greater than or equal to the current theoretical arrival time.

15. (Original) The network device as recited in claim 14, wherein said cell processing unit is further configured to update the rollover data if the theoretical arrival time for one of the communication channels is incremented past its maximum value so that it rolls over, wherein B is cleared if B was set when the theoretical arrival time rolled over, and R is set if B was not set when the theoretical arrival time rolled over.

16. (Original) The network device as recited in claim 1, wherein the network device is configured as an Asynchronous Transfer Mode (ATM) switch for the plurality of communication channels, wherein each communication channel is an ATM virtual channel.

17. (Currently amended) A method, comprising:

receiving incoming data cells from a network for a plurality of communication channels, wherein each received incoming data cell has an arrival time from a timer value;

for each received incoming data cell, accessing one or more policing parameters and rollover data for the communication channel on which the incoming data cell was received, wherein the rollover data comprises an indication of a rollover relationship between the timer value and one of the policing parameters for each of the communication channels;

for each received incoming data cell, comparing the received incoming data cell's arrival time to the one or more policing parameters for the received incoming data cell's communication channel to determine if the received incoming data cell is conforming or non-conforming to a rate for the

communication channel, wherein said comparing comprises using the rollover data for the received incoming data cell's communication channel to account for the rollover relationship between the arrival time and the one or more policing parameters; and

storing operations and maintenance data indicating connection availability information for each of the plurality of communication channels.

18. (Original) The method as recited in claim 17, further comprising:

incrementing the timer value at a predetermined frequency, wherein the timer value rolls over to zero and continues incrementing upon reaching a maximum timer value; and

wherein the one or more policing parameters comprise a theoretical arrival time, wherein said theoretical arrival time rolls over upon being incremented past a maximum value, and wherein the rollover data is configured to indicate for each communication channel whether or not the timer value and theoretical arrival time are in the same rollover phase.

19. (Original) The method as recited in claim 18, further comprising:

indicating a current rollover phase of the timer value; and

updating the rollover data for each communication channel at least once per rollover phase of the timer value.

20. (Original) The method as recited in claim 19, wherein for each communication channel the rollover data is further configured to indicate the rollover phase of the timer value the last time the rollover data was updated, wherein said updating the rollover data for each communication channel comprises:

comparing the current rollover phase of the timer value to the rollover phase of the timer the last time the rollover data was updated;

if the current rollover phase of the timer value is different than the rollover phase of the timer the last time the rollover data was updated:

updating the rollover data to indicate if the theoretical arrival time is ahead, behind, or in the same rollover phase as the timer value; and

updating the rollover data to indicate the current timer value rollover phase as the rollover phase of the timer value the last time the rollover data was updated.

21. (Original) The method as recited in claim 20, wherein said indicating a current rollover phase of the timer value comprises toggling a global register bit each time the timer value rolls over, and wherein for each communication channel, the rollover data comprises:

a bit R, wherein R is set to indicate that the theoretical arrival time value for the communication channel is ahead of the timer value in rollover phase;

a bit B, wherein B is set to indicate that the theoretical arrival time value for the communication channel is behind the timer value in rollover phase, wherein R and B are both cleared to indicate that the theoretical arrival time value for the communication channel and the timer value are in the same rollover phase; and

a bit V, wherein V indicates the rollover phase of the timer value the last time the rollover data was updated.

22. (Currently amended) The method as recited in claim 19, further comprising:

storing operations and maintenance data for each communication channel, wherein the operations and maintenance data indicates connection availability information, wherein said performance parameters, said rollover data and said operations and maintenance data are all stored in a table having an entry for each communication channel;

performing a scanning function to scan the operations and maintenance data in the table for the plurality of communication channels at least once per rollover phase of the timer value; and

wherein said updating the rollover data is performed as part of said scanning function.

23. (Original) The method as recited in claim 22, further comprising:

setting a timer rollover indicator when the timer value rolls over; and

wherein said scanning function is performed more frequently than once per roll over phase of the timer value, wherein said performing a scanning function comprises:

checking the timer rollover indicator upon initiating the scanning function:

wherein if the timer rollover indicator is set, performing said updating the rollover data with the scanning function for each communication channel; and

wherein if the timer rollover indicator is not set, the scanning function is performed without updating the rollover data; and

clearing the timer rollover indicator upon completing the scan function for each communication channel in which said updating the rollover data is performed for each communication channel.

24.   (Original)   The method as recited in claim 23, wherein for each communication channel the rollover data is further configured to indicate the rollover phase of the timer value the last time the rollover data was updated, wherein said updating the rollover data comprises:

comparing the current rollover phase of the timer value to the rollover phase of the timer the last time the rollover data was updated;

if the current rollover phase of the timer value is different than the rollover phase of the timer the last time the rollover data was updated:

updating the rollover data to indicate if the theoretical arrival time is ahead, behind, or in the same rollover phase as the timer value; and

updating the rollover data to indicate the current timer value rollover phase as the rollover phase of the timer value the last time the rollover data was updated.

25. (Original) The method as recited in claim 18, further comprising:

indicating a current rollover phase of the timer value;

wherein for each communication channel the rollover data is further configured to indicate the rollover phase of the timer value the last time the rollover data was updated;

before said comparing the received incoming data cell's arrival time to the one or more policing parameters for each received incoming data cell, comparing the current rollover phase of the timer value to the rollover phase of the timer the last time the rollover data was updated, and if the current rollover phase of the timer value is different than the rollover phase of the timer the last time the rollover data was updated, updating the rollover data for the received incoming data cell's communication channel.

26. (Original) The method as recited in claim 25, further comprising updating the rollover data for each communication channel at least once per rollover phase of the timer value, wherein said updating the rollover data for each communication channel at least once per rollover phase of the timer value comprises:

checking for each communication channel if the current rollover phase of the timer value is different than the rollover phase of the timer the last time the rollover data was updated;

if the current rollover phase of the timer value is different than the rollover phase of the timer the last time the rollover data was updated, modifying the rollover data for that communication channel to reflect the current phase relationship between the timer value and theoretical arrival time; and

if the current rollover phase of the timer value is not different than the rollover phase of the timer the last time the rollover data was updated, leaving the rollover data for that communication channel unmodified.

27.   (Original)   The method as recited in claim 26, wherein for each communication channel, the rollover data comprises:

a bit R, wherein R is set to indicate that the theoretical arrival time value for the communication channel is ahead of the timer value in rollover phase;

a bit B, wherein B is set to indicate that the theoretical arrival time value for the communication channel is behind the timer value in rollover phase, wherein R and B are both cleared to indicate that the theoretical arrival time value for the communication channel and the timer value are in the same rollover phase; and

a bit V, wherein V indicates the rollover phase of the timer value the last time the rollover data was updated.

28.   (Original)   The method as recited in claim 27, wherein the one or more policing parameters further comprise a limit value, wherein said comparing the received incoming data cell's arrival time to the one or more policing parameters for each received incoming data cell comprises determining the received incoming data cell to be conforming if:

R is set and the cell's arrival time is greater than or equal to the theoretical arrival time minus the limit value, taking into account that the theoretical arrival time is ahead of the cell's arrival time in rollover phase; or

R is not set and B is set; or

R and B are both not set and the cell's arrival time is greater than or equal to the theoretical arrival time minus the limit value.

29. (Original) The method as recited in claim 28, wherein said comparing the received incoming data cell's arrival time to the one or more policing parameters for each received incoming data cell further comprises determining the received incoming data cell to be non-conforming if:

R is set and the cell's arrival time is less than the theoretical arrival time minus the limit value, taking into account that the theoretical arrival time is ahead of the cell's arrival time in rollover phase; or

R and B are both not set and the cell's arrival time is less than the theoretical arrival time minus the limit value.

30. (Original) The method as recited in claim 29, wherein the one or more policing parameters further comprise an increment value, the method further comprising:

for each received incoming data cell, if the received incoming data cell is found to be conforming, setting the theoretical arrival time for that cell's communication channel to:

the current theoretical arrival time plus the increment value if R is set or if R is not set and the cell's arrival time is less than the current theoretical arrival time; or

the cell's arrival time plus the increment value if R is not set and the cell's arrival time is greater than or equal to the current theoretical arrival time.

31. (Original) The method as recited in claim 30, wherein said setting the theoretical arrival time further comprises updating the rollover data if the theoretical arrival time is incremented past its maximum value so that it rolls over, wherein B is

cleared if B was set when the theoretical arrival time rolled over, and R is set if B was not set when the theoretical arrival time rolled over.

32. (Previously presented) The method as recited in claim 17, wherein each communication channel is an Asynchronous Transfer Mode (ATM) virtual channel.